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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,480	10/17/2005	David Anthony Troman	11033-067US1/H10545US	1192
26161	7590	10/06/2006	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			CULLER, JILL E	
			ART UNIT	PAPER NUMBER

2854

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/523,480	Applicant(s) TROMAN, DAVID ANTHONY	
	Examiner Jill E. Culler	Art Unit 2854	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20050204
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the projecting part recited in claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,844,632 to Minowa in view of U.S. Patent No. 4,329,075 to Applegate et al.

With respect to claim 1, Minowa teaches a printing apparatus, 100, having at a printing station, a print head, 110, with an array of heating elements individually energisable by a computer controller, 90, wherein the print head is mounted by a mounting structure for generally linear movement towards and away from the substrate. See column 4, lines 20-41.

Minowa does not teach a feed path for feeding carrier ribbon through the printing station, the carrier ribbon carrying a layer of thermally sensitive print medium, pixels of the thermally sensitive print medium being in use deposited on a print area of a substrate, by selectively energising the heating elements, as the substrate and print head are relatively moved, the apparatus including a backing member and the substrate being positioned in use between the backing member and the carrier ribbon, or one of the mounting structure and print head including a projecting part which projects towards the other and at least during printing, engages with the other of the mounting structure and print head, there being a resilient member between the mounting structure and the

print head, which allows resiliently resisted movement between the mounting structure and print head with the projecting part engaged with the other of the mounting structure and print head, and there being at least one fastener to couple the mounting structure and print head together.

Applegate et al. teaches a feed path for feeding carrier ribbon, 116, through the printing station, the carrier ribbon carrying a layer of thermally sensitive print medium, pixels of the thermally sensitive print medium being in use deposited on a print area of a substrate, 106, by selectively energising the heating elements, as the substrate and print head are relatively moved, the apparatus including a backing member, 104, and the substrate being positioned in use between the backing member and the carrier ribbon, see column 3, lines 1-35, and Fig. 2, and one of the mounting structure, 14, and print head, 16, including a projecting part which projects towards the other and at least during printing, engages with the other of the mounting structure and print head, there being a resilient member, 18, between the mounting structure and the print head, which allows resiliently resisted movement between the mounting structure and print head with the projecting part engaged with the other of the mounting structure and print head, and there being at least one fastener, 28, to couple the mounting structure and print head together. See column 2, lines 29-56 and Figs. 1 and 6.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the invention of Minowa to have the thermal ribbon structure and print head structure taught by Applegate et al. in order to provide printing with fewer ribbon tension errors.

With respect to claims 2-4, Minowa does not teach that between the print head and mounting structure there is provided a resilient spacer, the spacer having a thickness slightly greater than the extent of projection of the projecting part or that the projecting part is provided on the mounting structure, and at least a tip of the projecting part is hardened to provide a bearing surface and there is a pad of hardened material on the print head.

Applegate et al. teaches between the print head, 16, and mounting structure, 14, there is provided a resilient spacer, 18, the spacer having a thickness slightly greater than the extent of projection of the projecting part, and the projecting part is provided on the mounting structure, and at least a tip of the projecting part is hardened to provide a bearing surface and there is a pad of hardened material on the print head. See column 2, lines 29-41 and Figs. 1 and 6.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the invention of Minowa to have the print head structure taught by Applegate et al. in order to provide printing with fewer ribbon tension errors.

With respect to claim 5, Minowa teaches the printing apparatus is an intermittent printer in which during printing, the print head, 110, moves at the printing station and the substrate and carrier are one of stationary and moveable, and the backing member, 108, is stationary during printing. See column 6, lines 6-12.

With respect to claim 6, Minowa teaches that during printing the print head, 201, moves at the printing station and the substrate and carrier are one of stationary and

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moveable, and the backing member, 207, moves with the print head relative to the substrate and carrier. See column 9, lines 33-43.

With respect to claim 8, Minowa teaches the print head, 110, is moved at least towards the substrate just prior to printing by a single acting actuator, and the print head moves away from the substrate under the action of a spring. See column 4, lines 39 - 61.

With respect to claims 9-10, Minowa teaches the print head is moved towards the substrate just prior to printing to an in use position, and is moved away from the substrate to a retracted position between printing, by a double acting actuator wherein the double acting actuator moves the print head in response to control signals from the controller of the printer, and the double acting actuator, in response to a specific control signal from the controller, moves the print head away from the substrate beyond the retracted position. See column 4, line 39 - column 5, line 41.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa in view of Applegate et al. as applied to claims 1-6 and 8-10 above, and further in view of U.S. Patent No. 5,366,302 to Masumura et al.

Minowa and Applegate et al. teach all that is claimed, as in the above rejection of claims 1-6 and 8-10 except that the apparatus is a continuous printer in which the print head is stationary at the printing station and the backing member is stationary, whilst the substrate and carrier move past the print head.

Masumura et al. teaches a continuous printer in which the print head, 11, is stationary at the printing station and the backing member, P, is stationary, whilst the substrate and carrier move past the print head. See column 4, lines 7-16.

It would have been obvious to one having ordinary skill in the art to further modify the apparatus of Minowa to have the continuous printing operation, as taught by Masumura et al. in order to minimize errors created by movement of a printhead.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa in view of Applegate et al. as applied to claims 1-6 and 8-10 above, and further in view of U.S. PGPUB 2002/0080223 to Connor.

Minowa and Applegate et al. teach all that is claimed, as in the above rejection of claims 1-6 and 8-10 except that the specific control signal from the controller is generated in response to a signal from a substrate thickness sensor which senses the thickness of the substrate, when the sensor senses that a thick part of the substrate is about to pass through the printing station.

Connor teaches a thickness sensor which senses the thickness of the substrate and controls the printing process based upon the signals generated by the sensor. See page 2, paragraph 24.

It would have been obvious to one having ordinary skill in the art to further modify the apparatus of Minowa to have the thickness sensor of Connor in order to be able to print more accurately on media of different thicknesses without interference from the force of the printhead.

6. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa in view of Applegate et al. as applied to claims 1-6 and 8-10 above, and further in view of U.S. Patent No. 4,924,240 to Herbert et al. and U.S. Patent No. 4,015,701 to Templeton.

Minowa and Applegate et al. teach all that is claimed, as in the above rejection of claims 1-6 and 8-10 except that the printing apparatus includes a carrier ribbon supply spool and a carrier ribbon take-up spool, the carrier ribbon feed path being from the supply to the take-up spool through the printing station, each of the take-up and supply spools being driven by a drive motor so that the supply spool and take-up spool are rotated when it is desired to feed ribbon, the motors each being a D.C. servo motor and each of the supply and take-up spool having a rotation sensor to sense spool rotation and wherein to enable the spools to be stopped quickly, the controller of the apparatus provides a reverse voltage to the motors.

Herbert et al. teaches a carrier ribbon supply spool, 16, and a carrier ribbon take-up spool, 17, the carrier ribbon feed path being from the supply to the take-up spool through the printing station, the supply spool being driven by a drive motor, 22, and having a rotation sensor, 21, to sense spool rotation.

It would have been obvious to one having ordinary skill in the art to further modify the apparatus of Minowa to include the spools and drive motor and sensor of Herbert et al. in order to have better control over the ribbon movement.

Templeton teaches a printing apparatus including a drive roller having a D.C. servo motor, 91, and a rotation sensor wherein to enable the spools to be stopped

quickly, the controller of the apparatus provides a reverse voltage to the motors. See column 4, line 66 - column 5, line 35 and column 8, lines 19-29.

It would have been obvious to one having ordinary skill in the art to further modify the apparatus of Minowa to have DC servo motors and rotation sensors, as taught by Templeton, in order to have better control over the ribbon movement.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 6,095,701 to Sattler and U.S. Patent No. 6,549,224 to Connor each teach an apparatus having apparent similarities to the claimed subject matter.

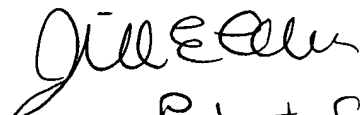
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill E. Culler whose telephone number is (571) 272-2159. The examiner can normally be reached on M-F 10:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jec


Patent Examiner